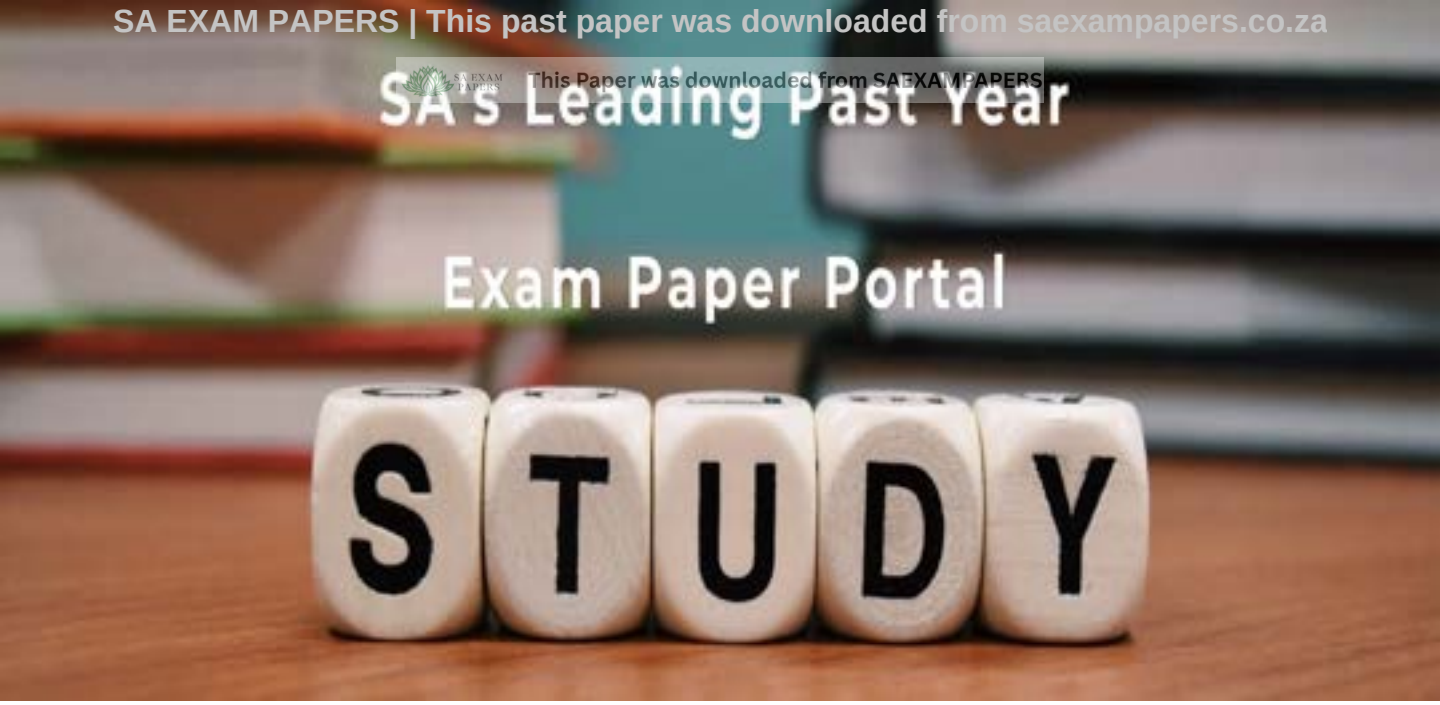


Province of the
EASTERN CAPE
EDUCATION

Iphondo leMpuma Kapa: Isebe leMfundo
Provinsie van die Oos Kaap: Department van Onderwys
Porafensie Ya Kapa Botjhabela: Lefapha la Thuto

NATIONAL SENIOR CERTIFICATE

GRADE 12

SEPTEMBER 2025

LIFE SCIENCES P1
MARKING GUIDELINE

MARKS: **150**

This marking guideline consists of 11 pages.

PRINCIPLES RELATED TO MARKING LIFE SCIENCES

1. **If more information than marks allocated is given**
   Stop marking when maximum marks is reached and put a wavy line and 'max' in the right-hand margin.

2. **If, for example, three reasons are required and five are given**
   Mark the first three irrespective of whether all or some are correct/incorrect.

3. **If whole process is given when only a part of it is required**
   Read all and credit the relevant part.

4. **If comparisons are asked for but descriptions are given**
   Accept if the differences/similarities are clear.

5. **If tabulation is required but paragraphs are given**
   Candidates will lose marks for not tabulating.

6. **If diagrams are given with annotations when descriptions are required**
   Candidates will lose marks.

7. **If flow charts are given instead of descriptions**
   Candidates will lose marks.

8. **If sequence is muddled and links do not make sense**
   Where sequence and links are correct, credit. Where sequence and links are incorrect, do not credit. If sequence and links become correct again, resume credit.

9. **Non-recognised abbreviations**
   Accept if first defined in answer. If not defined, do not credit the unrecognised abbreviation but credit the rest of the answer if correct.

10. **Wrong numbering**
    If answer fits into the correct sequence of questions but the wrong number is given, it is acceptable.

11. **If language used changes the intended meaning**
    Do not accept.

12. **Spelling errors**
    If recognisable, accept the answer, provided it does not mean something else in Life Sciences or if it is out of context.

13. **If common names are given in terminology**
    Accept, provided it was accepted at the provincial memo discussion meeting.

14. **If only the letter is asked for but only the name is given (and vice versa)**
Do not credit.

15. **If units are not given in measurements**
Candidates will lose marks. Marking guideline will allocate marks for units separately.

16. **Be sensitive to the sense of an answer, which may be stated in a different way.**

17. **Caption**
All illustrations (diagrams, graphs, tables, etc.) must have a caption.

18. **Code-switching of official languages (terms and concepts)**
A single word or two that appear(s) in any official language other than the learners' assessment language used to the greatest extent in his/her answers should be credited if it is correct. A marker that is proficient in the relevant official language should be consulted. This is applicable to all official languages.

SECTION A

QUESTION 1

1.1.1	B ✓✓		
1.1.2	A ✓✓		
1.1.3	B ✓✓		
1.1.4	D ✓✓		
1.1.5	C ✓✓		
1.1.6	C ✓✓		
1.1.7	B ✓✓		
1.1.8	D ✓✓		
1.1.9	A ✓✓		
1.1.10	B ✓✓	(10 x 2)	(20)

1.2.1	Puberty ✓		
1.2.2	Thorns ✓		
1.2.3	(Reproductive) strategy ✓		
1.2.4	Binocular vision ✓		
1.2.5	Testes ✓		
1.2.6	Kidney ✓		
1.2.7	Stimulus ✓		
1.2.8	Chorion ✓		
1.2.9	Multiple Sclerosis ✓	(9 x 1)	(9)

1.3.1	Both A and B ✓✓		
1.3.2	Both A and B ✓✓		
1.3.3	None ✓✓	(3 x 2)	(6)

1.4.1	(a) A ✓ – Prostate gland ✓		(2)
	(b) B ✓ – Epididymis ✓		(2)
1.4.2	- Penis/D deposits sperm directly into the female reproductive tract ✓ during ejaculation, - ensuring that sperm are closer to the egg cell ✓ for potential fertilisation. **(Mark first ONE only)**	(1 x 2)	(2)
1.5.1	(a) Oviparous ✓		(1)
	(b) Allantois ✓		(1)
1.5.2	- The foetus obtains nutrients directly from the mothers' body ✓ - The foetus is protected by the mother's body from the environment ✓ **(Mark first TWO only)**		(2)

1.6.1	(a)	TSH/Thyroid stimulating hormone ✓	(1)
	(b)	Thyroid gland ✓	(1)
	(c)	Negative feedback ✓ mechanism	(1)
1.6.2	(a)	Goitre ✓	(1)
	(b)	Thyroxin ✓	(1)
			[50]

TOTAL SECTION A: 50

SECTION B

QUESTION 2

2.1 2.1.1 (a) A – Pinna ✓ (1)

(b) D – Auditory nerve ✓ (1)

2.1.2
- The buildup of fluid in the middle ear increases pressure which reduces the ability of the tympanic membrane (structure E) to vibrate effectively ✓
  As a result, fewer sound vibrations are transmitted to the ossicles (structure B) ✓
- The fluid also restricts the movement of the ossicles, reducing the ability to amplify sound ✓
  This leads to less mechanical vibrations being passed on to the inner ear ✓resulting in the hearing loss. (4)

2.1.3 - Insert grommet✓ (into structure E) (1)

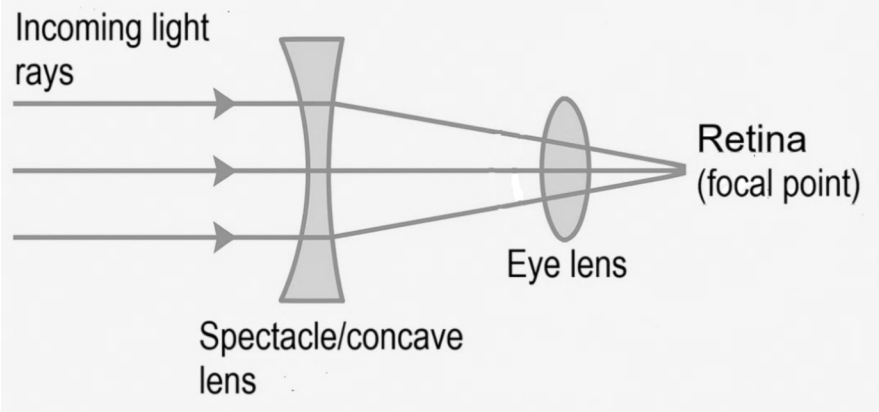
2.1.4 - The use of earplugs to prevent water entry to the middle ear ✓ (1)

2.1.5 The semi-circular canals / structure C:
- Are arranged at (right) angles of each other ✓
  To detect movement in three different planes/ as endolymph is displaced in each receptor(s) are stimulated ✓
- Contain cristae and ampullae ✓
  Detecting the speed of change in rotational movement of the head ✓
- Contain endolymph ✓
  That is displaced with head movement/rotation causing the cupula to bend ✓
  (Mark first TWO only) (2 x 2) (4)

2.2 2.2.1 Accommodation ✓ (1)

2.2.2
- Ciliary muscle relax ✓
- Suspensory ligaments are pulled taught ✓
- Tension on lens increases ✓
- Making the lens become flatter/less convex ✓
  Light rays are refracted (bent) less ✓ (Any 4 x 1) (4)

2.2.3



Marking guideline for drawing

Correct lens shape (concave) - **S**	1 Mark
Incoming light rays - **L**	1 Mark
How the light rays are adjusted (bended) to focus correctly on the retina - **B**	1 Mark

(3)

2.3 2.3.1
- The path an impulse takes ✓ from
- receptor to effector ✓ (2)

2.3.2
- Transmits impulses ✓ from receptors to the brain ✓
- Transmits impulses ✓ from the brain to effectors ✓
- It helps coordinate muscle movements and balance ✓ by transmitting impulses between the brain and body. ✓

(Mark first ONE only) (Max 2) (Any 1 x 2) (2)

2.3.3

B/ Sensory neuron	**D/ Motor neuron**
Unipolar ✓	Multipolar ✓
Enter the spinal cord via the dorsal root ✓	Exit spinal cord via ventral root ✓
(Mark first TWO only)	

Table ✓+ (2 x 2) (5)

2.3.4 Synapse ✓*
- It ensures that the impulse moves in one direction only ✓
- It prevents continuous stimulation of the neurons ✓
- It ensures that the impulse is transmitted from the sensory neuron to the motor neuron

(**Mark first TWO only and ✓***) (3)

2.4 2.4.1 Autonomic nervous system ✓ (1)

2.4.2
- Sympathetic nerve
  Increase cardiac rhythm ✓ increasing ✓blood flow around the body
- Parasympathetic
  Returning ✓ cardiac rhythm back to normal ✓ operating conditions (4)

2.5 2.5.1 Aldosterone ✓ (1)

2.5.2 $\frac{83}{360}$ ✓x 2 600 ✓ = 599,44 ✓ cm^3 (3)

2.5.3
- ADH will travel in the blood to the kidneys/nephron ✓
- Causing an increase in permeability ✓
- Within the collecting ducts/nephron ✓
- More water is absorbed from the filtrate ✓
- Less water is expelled through the urine ✓ (Any 4 x 1) (4)

2.5.4 (a) Cold day ✓ (1)

(b) - High volume of urine produced ✓*
During a cold day, the body sweats less and produces more, urine to remove extra water ✓
- Little sweat is being produced ✓*
During a cold day, the body does not need to cool down, so less sweat is produced ✓
(Mark FIRST TWO only) (2 x 2) (4)
[50]

QUESTION 3

3.1 3.1.1 (a) Implantation ✓ (1)

(b) Morula ✓ (1)

3.1.2
- Facilitate the movement of sperm cells, egg cells and the zygote to the uterus✓/produce peristaltic movements to facilitate movements of sperm, egg and zygote/ to catch and usher ovum into Fallopian tube
- Site of fertilisation ✓
- To keep sperm cells, egg cells and the zygote hydrated ✓/ provides a suitable environment/nourishment for the fertilized ovum (zygote) before it moves to the uterus. (Any 2)

OR

- Helps sperm reach the ovum ✓ for fertilisation ✓
- To keep sperm cells, egg cells and the zygote hydrated ✓/ provides a suitable environment/nourishment for the fertilized ovum (zygote) before it moves to the uterus. (Any 2) (2)

3.1.3
- The hormones, estrogen and progesterone ✓* cause the endometrium to become
- more vascular ✓
- more glandular
  increasing the endometrium lining size – more glandular ✓

(Mark ✓* + Any 1 only) (2)

3.1.4
- Nutrition ✓
  It allows for diffusion of nutrients from the mother to the foetus ✓
- Gaseous exchange ✓
  Diffusion of oxygen from the mother to the foetus and for the diffusion of carbon dioxide from the foetus to the mother ✓
- diffusion of waste products and nutrients ✓
  from the foetus to the mother ✓
- Endocrine function ✓
  After 12 weeks, the placenta secretes progesterone to maintain the pregnancy ✓
- Acts as a microfilter ✓
  Preventing pathogenic microbes and certain toxins from entering into foetal blood.

(Mark first THREE only) (3 x 2) (6)

3.1.5 - Limited nutrition, ✓ the developing foetus will not be able to receive enough nutrients and oxygen ✓
- Toxicity ✓ might build up in the foetus as there will be limited removal of metabolic waste products ✓
(Mark first TWO only) (2 x 2) (4)

3.2 3.2.1 Pituitary/hypophysis ✓ gland (1)

3.2.2 Clomiphene treatment ✓ (1)

3.2.3 - Day 10/11 ✓ (1)

3.2.4 - FSH cause the development of mature Graafian follicle. ✓
- As a Graafian follicle grows, it secretes more oestrogen. ✓
- Therefore, rising oestrogen levels indicate that FSH is active and functioning. ✓ (2)

3.2.5 - Acquiring research tools/instruments ✓ to collect data with
- Deciding on how data will be recorded ✓ (2)

3.2.6 - Allowing researchers to identify trends ✓
- Reduces effects of random errors ✓ /outliers
- Improves accuracy of results ✓ (Any TWO) (2)

3.2.7 (a) The release of a (mature) ovum ✓ from the ovary/mature Graafian follicle ✓ (2)

(b) - Oestrogen levels peaked/drastically increased twice, ✓
- Once at day 10 and the other at day 20 ✓
- Oestrogen is secreted from developing follicles ✓ and
- the greater the size of the Graafian follicle, the greater amount of oestrogen secreted ✓
- Oestrogen levels usually spike the day before ovulation, it spiked twice within 27 days. ✓ (Any FOUR) (4)

3.3 3.3.1 - Decreased water availability/drought ✓
- Parasitism ✓
- Decreased light intensity ✓
- Coldness ✓
- Increased transpiration ✓ (Any ONE) (1)

3.3.2 - Inhibits plant growth in unfavourable conditions ✓
- Preventing the plant from expending energy where it might not be able to photosynthesise efficiently. ✓ (2)

3.3.3 Spring / Summer ✓ (1)

3.3.4
- Higher UV radiation will be available, plants will be able to photosynthesise better ✓
- GA stimulates cell elongation/plant growth/flowering to harness increased environmental energy ✓ (2)

3.4 In seedling A
- Auxins produced in the apical meristem
- Could not detect light direction ✓
- And remained evenly distributed ✓
- Causing the seedling to grow upwards ✓ (Any TWO) (2)

In seedling C
- Auxins produced in the apical meristem
- Where unevenly distributed ✓
- Accumulating on the left-hand side, causing cell elongation ✓
- Causing the seedling to bend towards the right ✓ (Any TWO) (2)

3.5 3.5.1 When insulin doesn't work properly, brain cells struggle to communicate, leading to memory problems. ✓✓ (2)

3.5.2
- amyloid plaques ✓
- tau tangles ✓ (2)

3.5.3
- Insulin will stimulate liver / hepatic / muscle cells ✓
- To convert excess glucose to glycogen ✓ which is stored in them (2)

3.5.4
- Insulin Resistance ✓

OR

- The body being unable to convert glucose to glycogen ✓ despite the secretion of insulin into the blood (1)

3.5.5
- Adrenalin ✓
- Could cause an increase in cellular respiration within cells, thus uptake of glucose ✓ (2)

[50]

TOTAL SECTION B: 100
GRAND TOTAL: 150